Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (currently amended) A composition comprising:
   (a) a virus-like particle;
   (b) at least one immunostimulatory substance;
      (i) wherein said immunostimulatory substance is an immunostimulatory nucleic acid; and
      (ii) wherein said immunostimulatory substance is packaged into said virus-like particle; and
   (c) at least one antigen or antigenic determinant;
      (i) wherein said antigen or antigenic determinant is bound to said virus-like particle; and
      (ii) wherein said antigen or antigenic determinant comprises a human melanoma MelanA peptide analogue that comprises an amino acid sequence derived from the amino acid sequence of SEQ ID NO:78 or SEQ ID NO:79 by alteration of one or two amino acid(s) or amino acid derivative(s) in said amino acid sequence, wherein said alteration comprises an amino acid substitution, deletion or insertion or a combination thereof.

2. (previously presented) The composition of claim 1, wherein said antigen or antigenic determinant is bound to said virus-like particle by at least one nonpeptide covalent bond.

3. (cancelled)

4. (cancelled)

5. (currently amended) The composition of claim 1, wherein said human melanoma MelanA peptide analogue is characterized by one or two amino acid substitutions with respect to the ~~corresponding~~ normal MelanA peptide.

6. (cancelled)

7. (currently amended) The composition of claim 1, wherein said human melanoma MelanA peptide analogue comprises an ~~has an~~ amino acid sequence selected from the group consisting of:
   (a) LAGIGILTV (SEQ ID NO:84);
   (b) MAGIGILTV (SEQ ID NO:85);
   (c) EAMGIGILTV (SEQ ID NO:86);
   (d) ELAGIGILTV (SEQ ID NO:50);
   (e) EMAGIGILTV (SEQ ID NO:87);
   (f) YAAGIGILTV (SEQ ID NO:88); and
   (g) FAAGIGILTV (SEQ ID NO:89).

8. (currently amended) The composition of claim 1, wherein said human melanoma MelanA~~/MART-1~~ peptide analogue comprises the sequence ELAGIGILTV (SEQ ID NO:50).

9. (previously presented) The composition of claim 1, wherein said virus-like particle comprises at least one first attachment site and wherein said antigen or antigenic determinant further comprises at least one second attachment site being selected from the group consisting of:
   (a) an attachment site not naturally occurring with said antigen or antigenic determinant; and
   (b) an attachment site naturally occurring with said antigen or antigenic determinant;

and wherein said binding of said antigen or antigenic determinant to said virus-like particle is effected through association between said first

attachment site and said second attachment site and wherein said antigen or antigenic determinant and said virus-like particle interact through said association to form an ordered and repetitive antigen array.

10. (cancelled)

11. (previously presented) The composition of claim 9, wherein said first attachment site comprises an amino group.

12. (previously presented) The composition of claim 9, wherein said second attachment site comprises a sulfhydryl group.

13. (cancelled)

14. (previously presented) The composition of claim 9, wherein said first attachment site is an amino group and said second attachment site is a sulfhydryl group.

15. (currently amended) The composition of claim 9, wherein said human melanoma MelanA peptide analogue with said second attachment site comprises an ~~has an~~ amino acid sequence selected from the group consisting of:

(a) CGHGHSYTTAEELAGIGILTV (SEQ ID NO:55);
(b) CGGELAGIGILTV (SEQ ID NO:57);
(c) CSYTTAEELAGIGILTV ILGVL (SEQ ID NO:58);
(d) CGGELAGIGILTVILGVL (SEQ ID NO:59);
(e) ELAGIGILTVGGC (SEQ ID NO:60);
(f) CSPKSLELAGIGILTV (SEQ ID NO:92); and
(g) ELAGIGILTVILGVLGGC (SEQ ID NO:93).

16. (currently amended) The composition of claim 9, wherein said human melanoma MelanA peptide analogue with said second attachment site comprises the ~~has an~~ amino acid sequence ~~of~~ CGHGHSYTTAEELAGIGILTV (SEQ ID NO:55).

17. (cancelled)

18. (previously presented) The composition of claim 1, wherein said virus-like particle is a recombinant virus-like particle, wherein said virus like particle comprises recombinant proteins selected from the group consisting of:
    (a) recombinant proteins of Hepatitis B virus;
    (b) recombinant proteins of measles virus;
    (c) recombinant proteins of Sindbis virus;
    (d) recombinant proteins of Rotavirus;
    (e) recombinant proteins of Foot-and-Mouth-Disease virus;
    (f) recombinant proteins of Retrovirus;
    (g) recombinant proteins of Norwalk virus;
    (h) recombinant proteins of human Papilloma virus;
    (i) recombinant proteins of BK virus;
    (j) recombinant proteins of bacteriophages;
    (k) recombinant proteins of RNA-phages;
    (l) recombinant proteins of Ty; and
    (m) fragments of any of the recombinant proteins from (a) to (l).

19. (cancelled)

20. (cancelled)

21. (previously presented) The composition of claim 1, wherein said virus-like particle comprises recombinant proteins, or fragments thereof, of a RNA-phage, wherein said RNA-phage is selected from the group consisting of:

(a) bacteriophage Qβ;
(b) bacteriophage R17;
(c) bacteriophage fr;
(d) bacteriophage GA;
(e) bacteriophage SP;
(f) bacteriophage MS2;
(g) bacteriophage M11;
(h) bacteriophage MX1;
(i) bacteriophage NL95;
(j) bacteriophage f2;
(k) bacteriophage PP7; and
(l) bacteriophage AP205.

22. (previously presented) The composition of claim 1, wherein said virus-like particle comprises recombinant proteins, or fragments thereof, of bacteriophage Qβ or bacteriophage AP205.

23. (currently amended) The composition of claim 1, wherein said immunostimulatory substance is a toll-like receptor activating substance, and wherein said immunostimulatory nucleic acid is selected from the group consisting of:

(a) ribonucleic acids;
(b) deoxyribonucleic acids;
(c) chimeric nucleic acids; and
(d) mixtures of at least one nucleic acid of (a), (b) and/or (c).

~~or a cytokine secretion inducing substance, wherein said toll-like receptor activating substance is selected from the group consisting of:~~

~~(a) immunostimulatory nucleic acids;~~
~~(b) peptidoglycans;~~
~~(c) lipopolysaccharides;~~
~~(d) lipoteichoic acids;~~

~~(e) imidazoquinoline compounds;~~

~~(f) flagellins;~~

~~(g) lipoproteins;~~

~~(h) immunostimulatory organic molecules;~~

~~(i) unmethylated CpG-containing oligonucleotides; and~~

(j) ~~any mixtures of at least one substance of (a), (b), (c), (d), (e), (f), (g), (h) and/or (i).~~

24. (cancelled)

25. (cancelled)

26. (currently amended) The composition of claim 23 ~~24~~, wherein said deoxyribonucleic acid is an ~~selected from the group consisting of:~~

~~(a)~~ unmethylated CpG-containing oligonucleotide~~s; and~~

~~(b) oligonucleotides free of unmethylated CpG motifs~~.

27. (previously presented) The composition of claim 1, wherein said immunostimulatory substance is an unmethylated CpG-containing oligonucleotide.

28. (previously presented) The composition of claim 27, wherein said unmethylated CpG-containing oligonucleotide comprises the sequence:

5' X1X2CGX3X4 3'

and wherein X1, X2, X3, and X4 are any nucleotide; and wherein at least one of said nucleotide X1, X2, X3, and X4 has a phosphate backbone modification.

29. (cancelled)

30. (previously presented) The composition of claim 27, wherein said unmethylated CpG-containing oligonucleotide comprises a palindromic sequence.

31. (cancelled)

32. (previously presented) The composition of claim 27, wherein said unmethylated CpG-containing oligonucleotide consists of the sequence GGGGGGGGGGGACGATCGTCGGGGGGGGGG (SEQ ID NO:41).

Claims 33-37 (cancelled)

38. (previously presented) The composition of claim 30, wherein said palindromic sequence comprises GACGATCGTC (SEQ ID NO: 1).

Claims 39-45 (cancelled)

46. (previously presented) A method for enhancing an immune response against an antigen in an animal comprising introducing the composition of claim 1 into said animal, wherein an enhanced immune response against said antigen is produced in said animal.

Claims 47-88 (cancelled)

89. (previously presented) The method of claim 46, wherein said immune response is an enhanced B cell response or an enhanced T cell response.

90. (previously presented) The method of claim 46, wherein said animal is a mammal.

91. (previously presented) The method of claim 46, wherein said composition is introduced into said animal subcutaneously, intramuscularly, intravenously, intranasally or directly into the lymph node.

92. (currently amended) ~~A vaccine~~ An immunogenic composition comprising an immunologically effective amount of the composition of claim 1 together with a pharmaceutically acceptable diluent, carrier or excipient.

93. (currently amended) A method of immunizing or treating an animal comprising administering to said animal an immunologically effective amount of the ~~vaccine~~ immunogenic composition of claim 92.

94. (previously presented) The method of claim 93, wherein said animal is a mammal.

95. (cancelled).

96. (cancelled).

97. (currently amended) A method of immunizing or treating an animal comprising the steps of priming a T cell response in said animal, and boosting a T cell response in said animal, wherein said priming or said boosting is effected by administering an immunologically effective amount of the ~~vaccine~~ immunogenic composition of claim 92.

98. (currently amended) The method of claim 97, wherein said priming and said boosting is effected by administering an immunologically effective amount of said ~~vaccine~~ immunogenic composition ~~of claim 92~~.

99. (previously presented) The method of claim 89, wherein said T cell response is a CTL response or a Th cell response.

100. (previously presented) The method of claim 99, wherein said Th cell response is a Th1 cell response.

101. (previously presented) The method of claim 90, wherein said mammal is a human.

102. (currently amended) The ~~vaccine~~ immunogenic composition of claim 92, wherein said ~~vaccine~~ immunogenic composition further comprises an adjuvant.

103. (previously presented) The method of claim 94, wherein said mammal is a human.

104. (new) The composition of claim 1, wherein said antigen or antigenic determinant consists of a human melanoma MelanA peptide analogue comprising an amino acid sequence derived from the amino acid sequence of SEQ ID NO:78 or SEQ ID NO:79 by alteration of one or two amino acid(s) or amino acid derivative(s) in said amino acid sequence, wherein said alteration comprises an amino acid substitution, deletion or insertion or a combination thereof.

105. (new) The composition of claim 1, wherein said antigen or antigenic determinant consists of a human melanoma MelanA peptide analogue consisting of an amino acid sequence derived from the amino acid sequence of SEQ ID NO:78 or SEQ ID NO:79 by alteration of one or two amino acid(s) or amino acid derivative(s) in said amino acid sequence, wherein said alteration comprise an amino acid substitution, deletion or insertion or a combination thereof.

106. (new) The composition of claim 1, wherein said amino acid substitution, deletion or insertion or a combination thereof is at position 1, 2, 3 or 10 of SEQ ID NO:78 or a combination thereof or at position 1, 2 or 9 of SEQ ID NO:79 or a combination thereof.

107. (new) The composition of claim 1, wherein said human melanoma MelanA peptide analogue comprises an amino acid sequence derived from the amino acid sequence of SEQ ID NO:78 or SEQ ID NO:79 by substitution of one amino acid.

108. (new) The composition of claim 107, wherein said substitution is at position 1, 2, 3 or 10 of SEQ ID NO:78 or a combination thereof or at position 1, 2 or 9 of SEQ ID NO:79 or a combination thereof.

109. (new) The composition of claim 1, wherein said human melanoma MelanA peptide analogue consists of the sequence ELAGIGILTV (SEQ ID NO:50).

110. (new) The composition of claim 1, wherein said virus-like particle comprises at least one first attachment site and wherein said antigen or antigenic determinant further comprises at least one second attachment site selected from the group consisting of:

(a) an attachment site not naturally occurring with said antigen or antigenic determinant; and

(b) an attachment site naturally occurring with said antigen or antigenic determinant;

wherein said binding of said antigen or antigenic determinant to said virus-like particle is effected through association between said first attachment site and said second attachment site.

111. (new) The composition of claim 110, wherein said antigen or antigenic determinant and said virus-like particle interact through said association to form an ordered and repetitive antigen array.

112. (new) The composition of claim 1, wherein said virus-like particle is a virus-like particle of an RNA-phage.

113. (new) The composition of claim 1, wherein said virus-like particle is a virus-like particle of RNA-phage Qβ.

114. (new) The composition of claim 1, wherein said virus-like particle comprises recombinant proteins of bacteriophage Qβ.

115. (new) The composition of claim 1, wherein said virus-like particle comprises recombinant proteins of bacteriophage Qβ, wherein said recombinant proteins comprise SEQ ID NO:10.

116. (new) The composition of claim 1, wherein said virus-like particle comprises recombinant proteins of bacteriophage Qβ, wherein said recombinant proteins consist of SEQ ID NO:10.

117. (new) The composition of claim 23, wherein said ribonucleic acids are polyinosinic-polycytidylic acid double-stranded RNA (poly-(I:C)).

118. (new) The composition of claim 1, wherein said immunostimulatory nucleic acid is not accessible to DNAse hydrolysis.

119. (new) The composition of claim 113, wherein said unmethylated CpG-containing oligonucleotide consists of the sequence GGGGGGGGGGGACGATCGTCGGGGGGGGGG (SEQ ID NO:41).

120. (new) The composition of claim 2, wherein said virus-like particle is a virus-like particle of RNA-phage Qβ.

121. (new) The composition of claim 120, wherein said virus-like particle comprises recombinant proteins of bacteriophage Qβ, and wherein said human melanoma MelanA peptide analogue consists of the sequence ELAGIGILTV (SEQ ID NO:50).

122. (new) The composition of claim 121, wherein said virus-like particle comprises at least one first attachment site and wherein said antigen or antigenic determinant further comprises at least one second attachment site selected from the group consisting of:

(a) an attachment site not naturally occurring with said antigen or antigenic determinant; and

(b) an attachment site naturally occurring with said antigen or antigenic determinant;

wherein said binding of said antigen or antigenic determinant to said virus-like particle is effected through association between said first attachment site and said second attachment site, and wherein said antigen or antigenic determinant and said virus-like particle interact through said association to form an ordered and repetitive antigen array.

123. (new) The composition of claim 122, wherein said first attachment site is an amino group and said second attachment site is a sulfhydryl group.

124. (new) The composition of claim 123, wherein said immunostimulatory substance is an unmethylated CpG-containing oligonucleotide, and wherein said unmethylated CpG-containing oligonucleotide consists of the sequence GGGGGGGGGGGACGATCGTCGGGGGGGGGG (SEQ ID NO:41).

125. (new) The composition of claim 124, wherein said virus-like particle comprises recombinant proteins of bacteriophage Qβ, wherein said recombinant proteins consist of SEQ ID NO:10.

126. (new) The composition of claim 125, wherein said human melanoma MelanA peptide analogue with said second attachment site consists of the amino acid sequence CGHGHSYTTAEELAGIGILTV (SEQ ID NO:55).